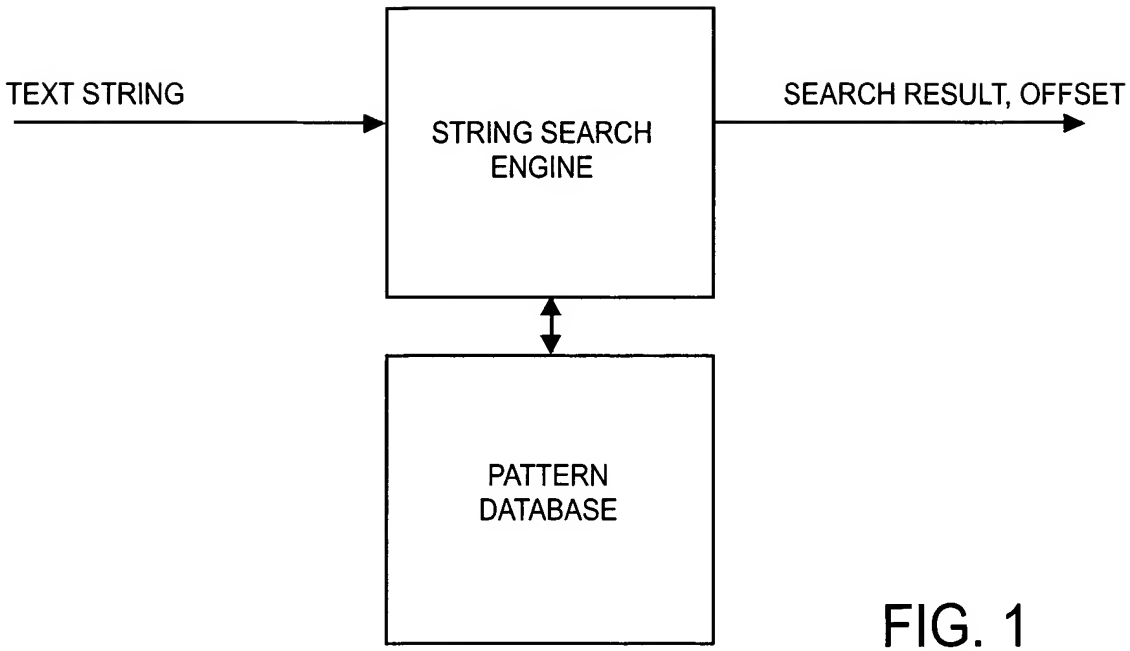


FIG. 1

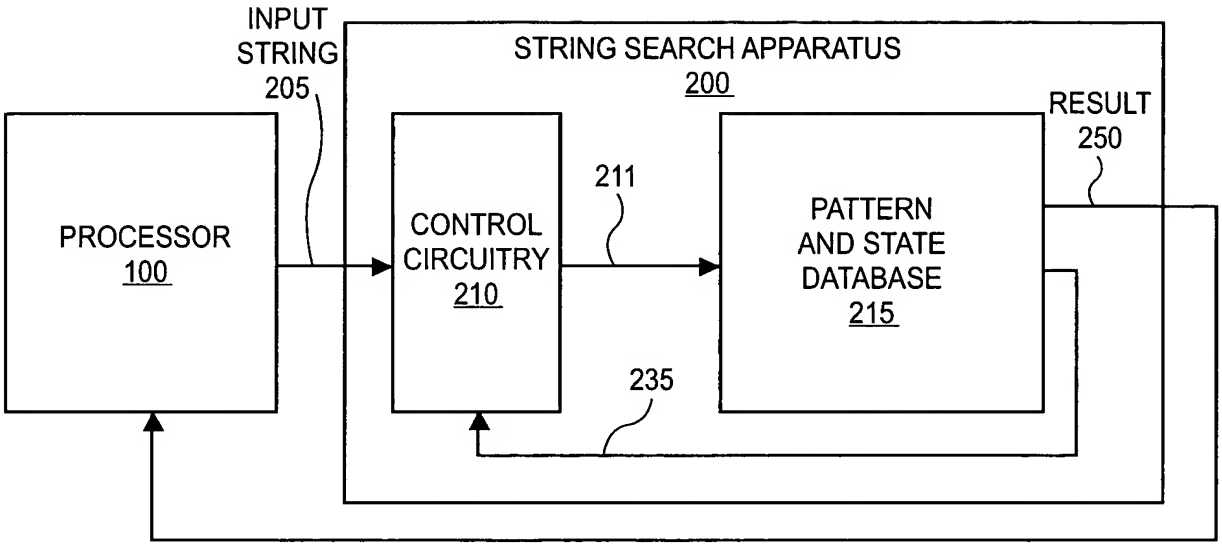

INPUT
STRING
205
STRING SEARCH APPARATUS
200
RESULT
250
PROCESSOR
100
CONTROL
CIRCUITRY
210
211
PATTERN
AND STATE
DATABASE
215
235

FIG. 2A

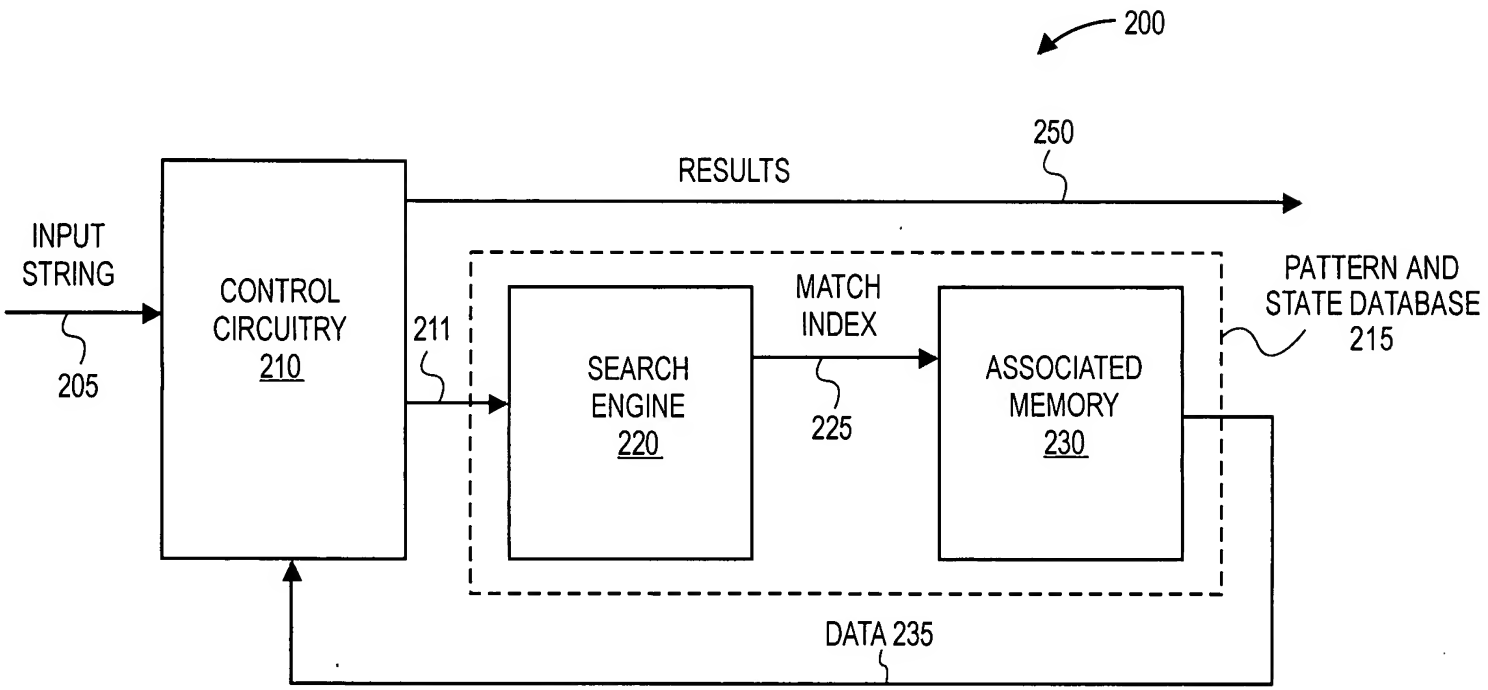
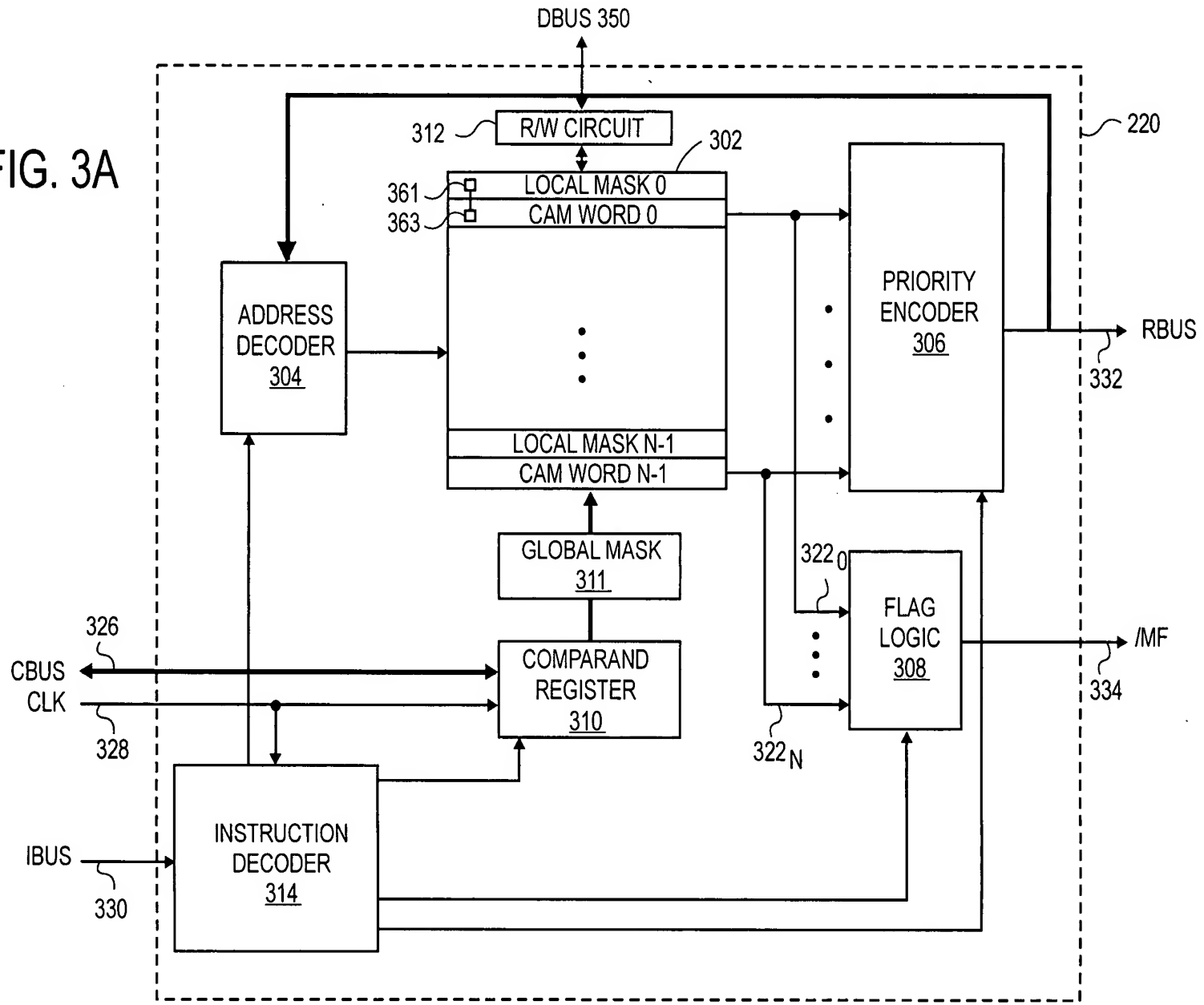

200
250
RESULTS
INPUT
STRING
205
CONTROL
CIRCUITRY
210
211
SEARCH
ENGINE
220
MATCH
INDEX
225
ASSOCIATED
MEMORY
230
PATTERN AND
STATE DATABASE
215
DATA 235

FIG. 2B

FIG. 3A


DBUS 350
220
312
R/W CIRCUIT
302
361
363
LOCAL MASK 0
CAM WORD 0
ADDRESS DECODER 304
PRIORITY ENCODER 306
RBUS
332
LOCAL MASK N-1
CAM WORD N-1
GLOBAL MASK 311
322 0
FLAG LOGIC 308
/MF
334
326
CBUS
CLK
328
COMPARAND REGISTER 310
322 N
IBUS
330
INSTRUCTION DECODER 314

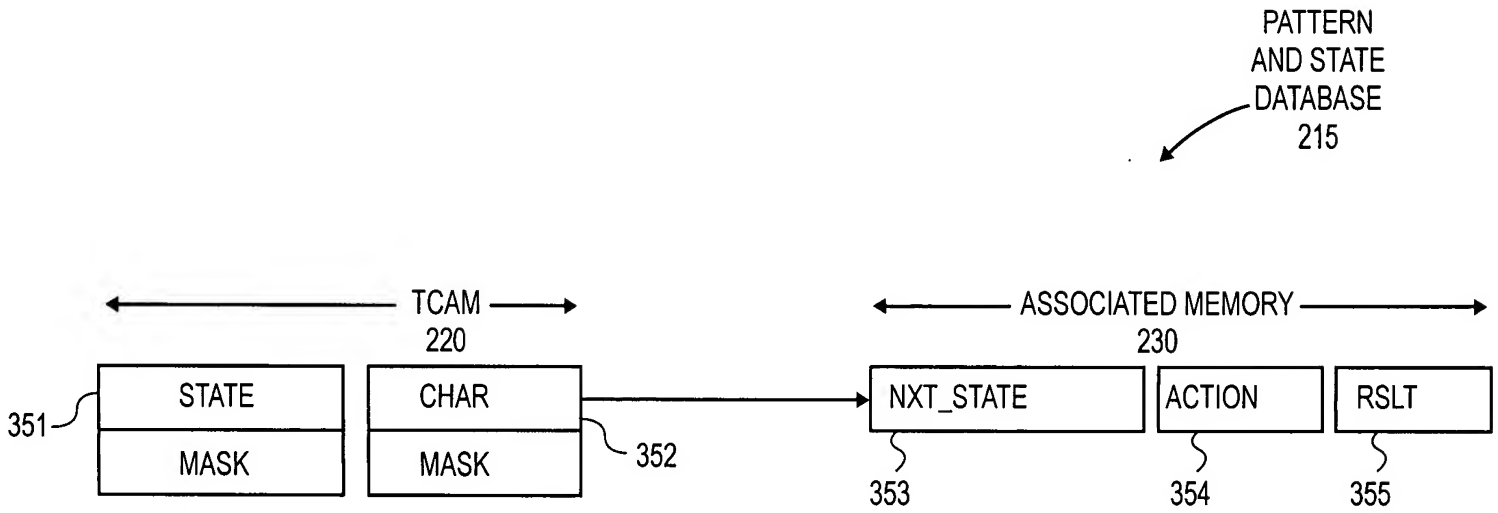

PATTERN
AND STATE
DATABASE
215
TCAM
220
ASSOCIATED MEMORY
230
STATE
MASK
CHAR
MASK
NXT_STATE
ACTION
RSLT
351
352
353
354
355

FIG. 3B

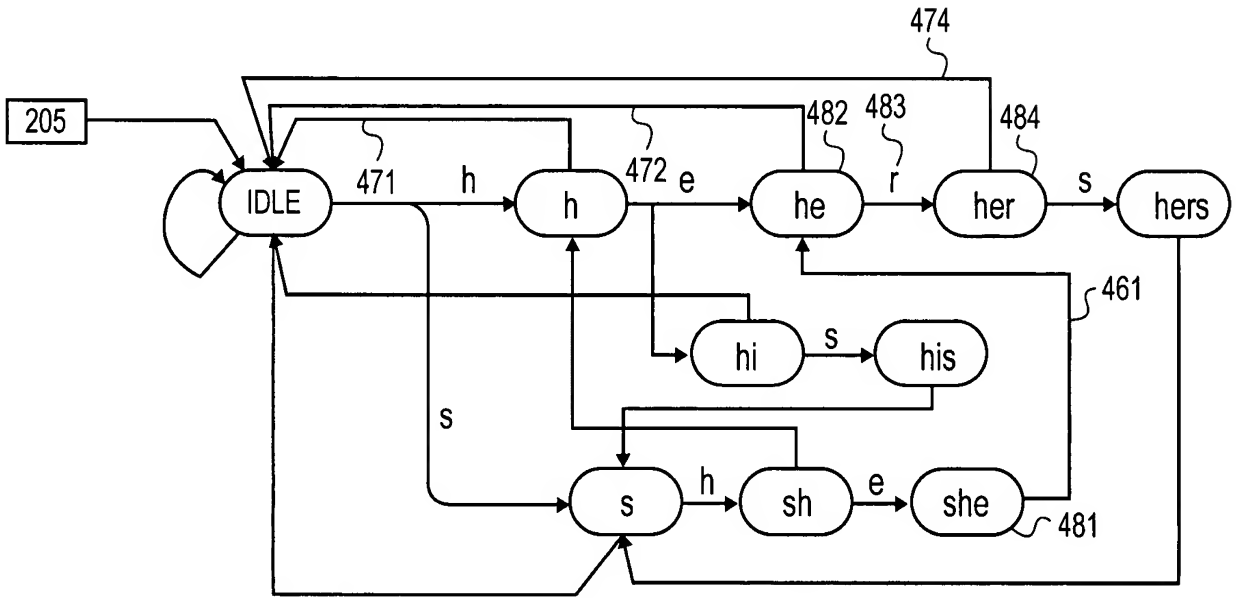

474
205
482
483
484
471
h
472
e
r
s
IDLE
h
he
her
hers
461
hi
s
his
s
s
h
sh
e
she
481

FIG. 4A

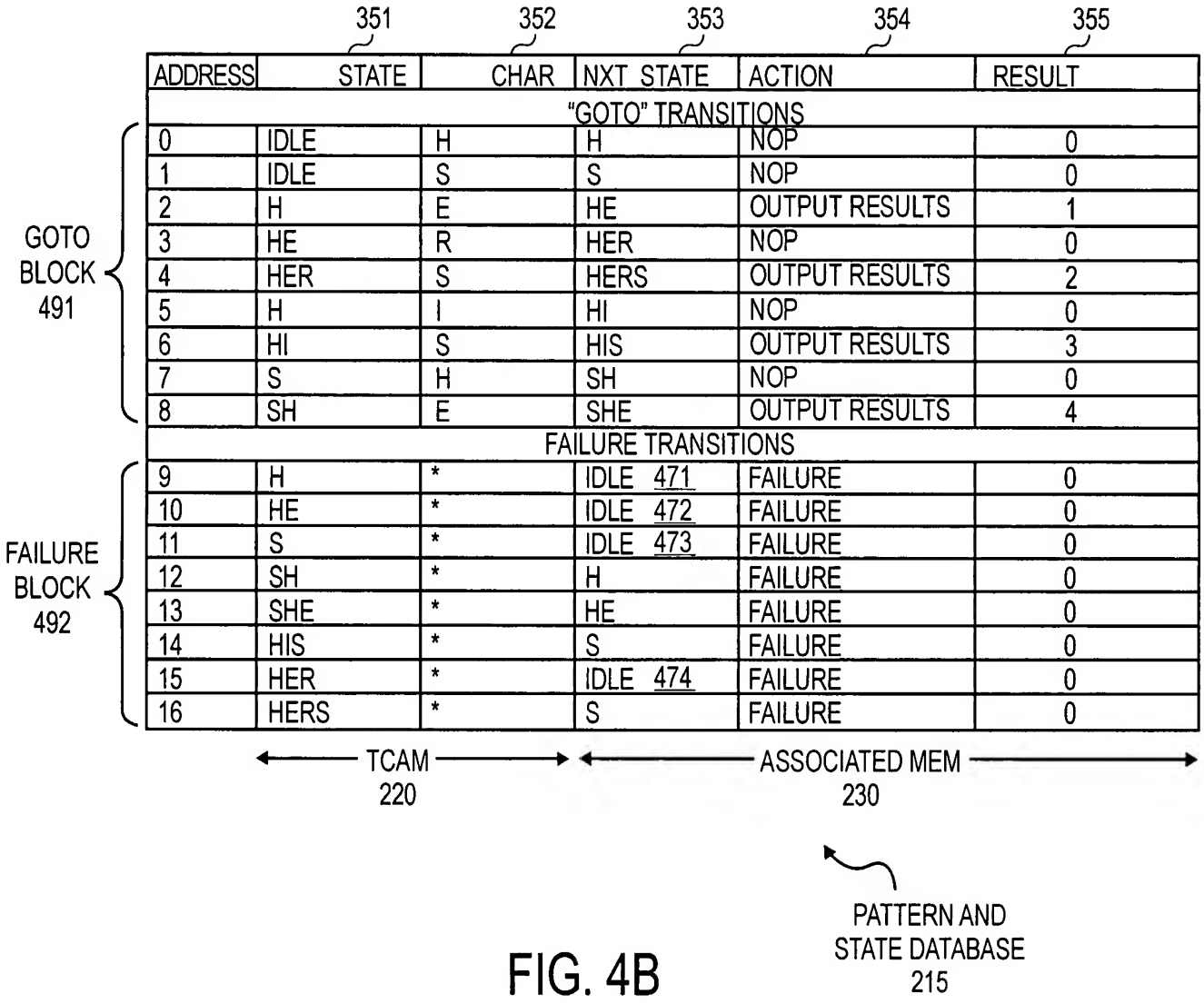

351
352
353
354
355
ADDRESS
STATE
CHAR
NXT STATE
ACTION
RESULT
"GOTO" TRANSITIONS
0 IDLE H H NOP 0
1 IDLE S S NOP 0
2 H E HE OUTPUT RESULTS 1
3 HE R HER NOP 0
4 HER S HERS OUTPUT RESULTS 2
5 H I HI NOP 0
6 HI S HIS OUTPUT RESULTS 3
7 S H SH NOP 0
8 SH E SHE OUTPUT RESULTS 4
FAILURE TRANSITIONS
9 H * IDLE 471 FAILURE 0
10 HE * IDLE 472 FAILURE 0
11 S * IDLE 473 FAILURE 0
12 SH * H FAILURE 0
13 SHE * HE FAILURE 0
14 HIS * S FAILURE 0
15 HER * IDLE 474 FAILURE 0
16 HERS * S FAILURE 0
GOTO BLOCK 491
FAILURE BLOCK 492
TCAM 220
ASSOCIATED MEM 230
PATTERN AND STATE DATABASE 215

FIG. 4B

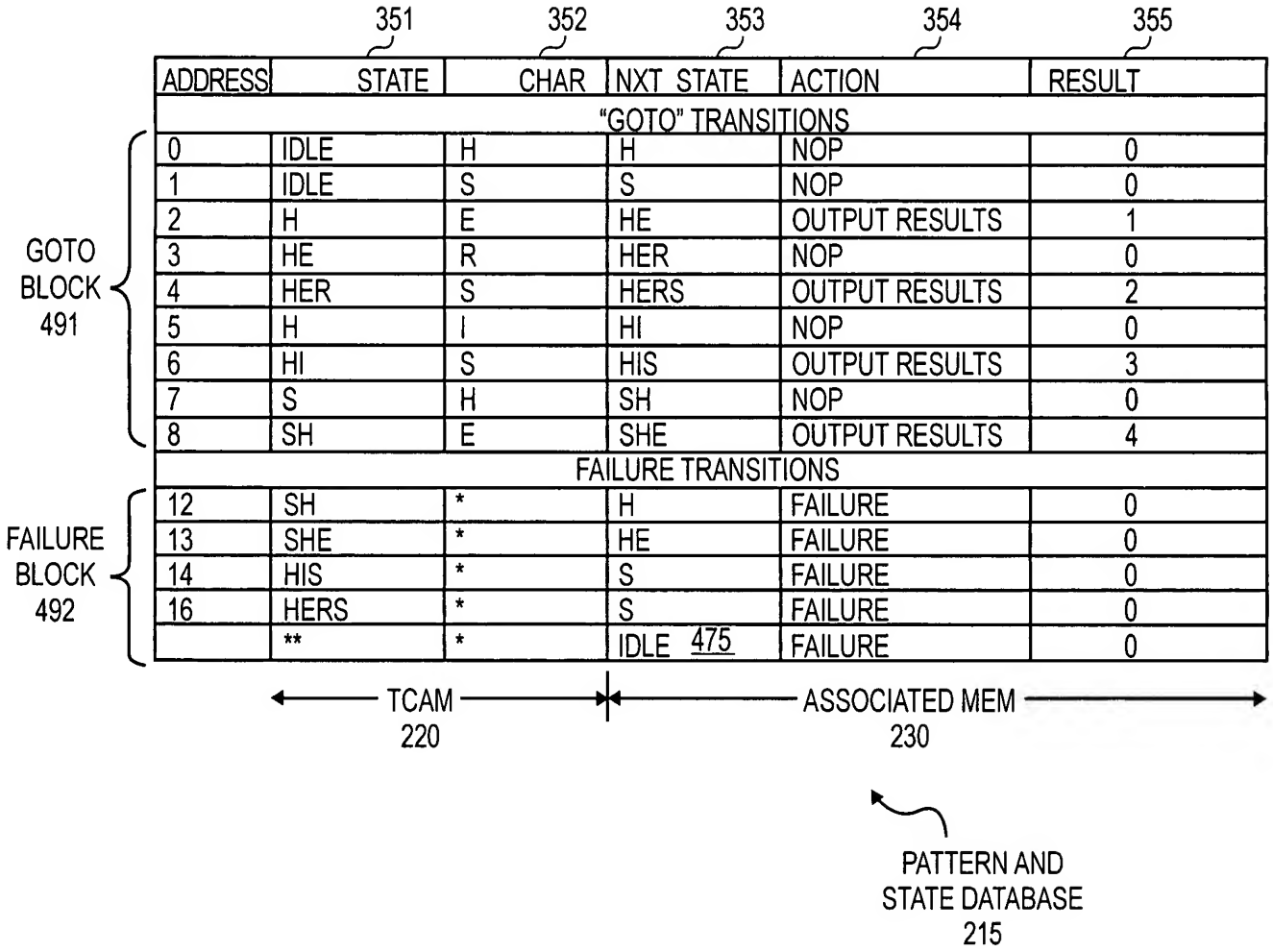

351
352
353
354
355
ADDRESS
STATE
CHAR
NXT STATE
ACTION
RESULT
"GOTO" TRANSITIONS
0 IDLE H H NOP 0
1 IDLE S S NOP 0
2 H E HE OUTPUT RESULTS 1
3 HE R HER NOP 0
4 HER S HERS OUTPUT RESULTS 2
5 H I HI NOP 0
6 HI S HIS OUTPUT RESULTS 3
7 S H SH NOP 0
8 SH E SHE OUTPUT RESULTS 4
GOTO BLOCK 491
FAILURE TRANSITIONS
12 SH * H FAILURE 0
13 SHE * HE FAILURE 0
14 HIS * S FAILURE 0
16 HERS * S FAILURE 0
** * IDLE 475 FAILURE 0
FAILURE BLOCK 492
TCAM 220
ASSOCIATED MEM 230
PATTERN AND STATE DATABASE 215

FIG. 4C

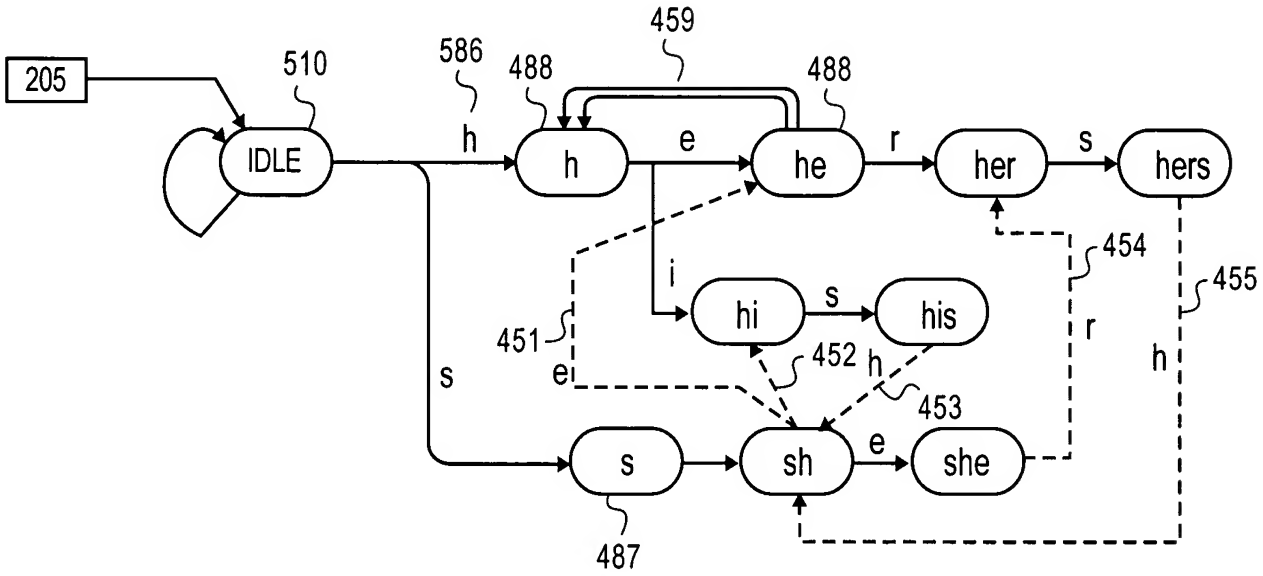

205
510
586
488
459
488
IDLE
h
h
e
he
r
her
s
hers
i
hi
s
his
451
454
455
r
h
e
452
h
453
s
s
sh
e
she
487

FIG. 5

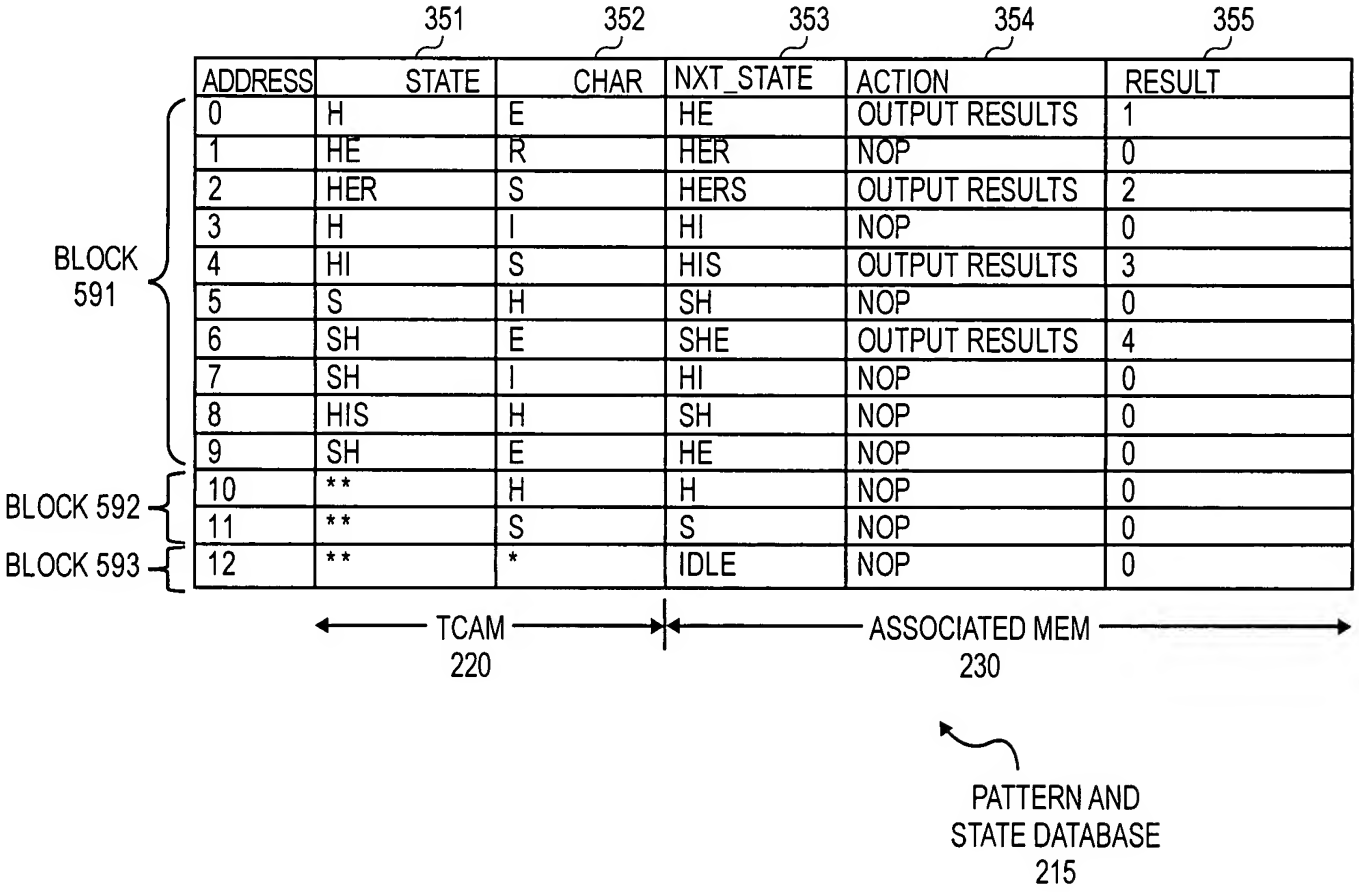

351
352
353
354
355
ADDRESS
STATE
CHAR
NXT_STATE
ACTION
RESULT
0 H E HE OUTPUT RESULTS 1
1 HE R HER NOP 0
2 HER S HERS OUTPUT RESULTS 2
3 H I HI NOP 0
4 HI S HIS OUTPUT RESULTS 3
5 S H SH NOP 0
6 SH E SHE OUTPUT RESULTS 4
7 SH I HI NOP 0
8 HIS H SH NOP 0
9 SH E HE NOP 0
10 ** H H NOP 0
11 ** S S NOP 0
12 ** * IDLE NOP 0
BLOCK 591
BLOCK 592
BLOCK 593
TCAM 220
ASSOCIATED MEM 230
PATTERN AND STATE DATABASE 215

FIG. 6

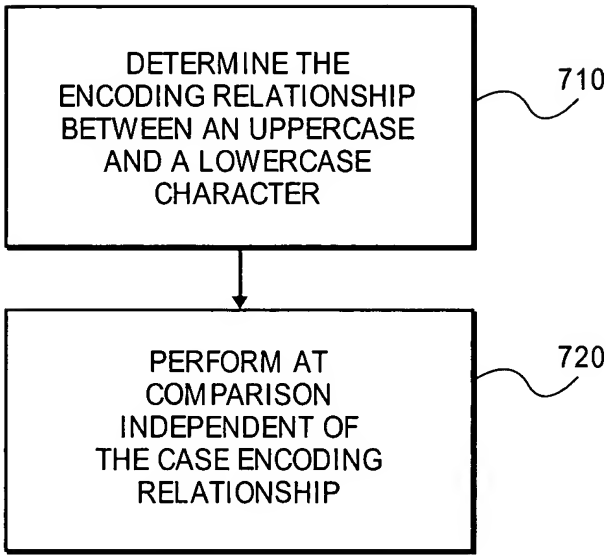
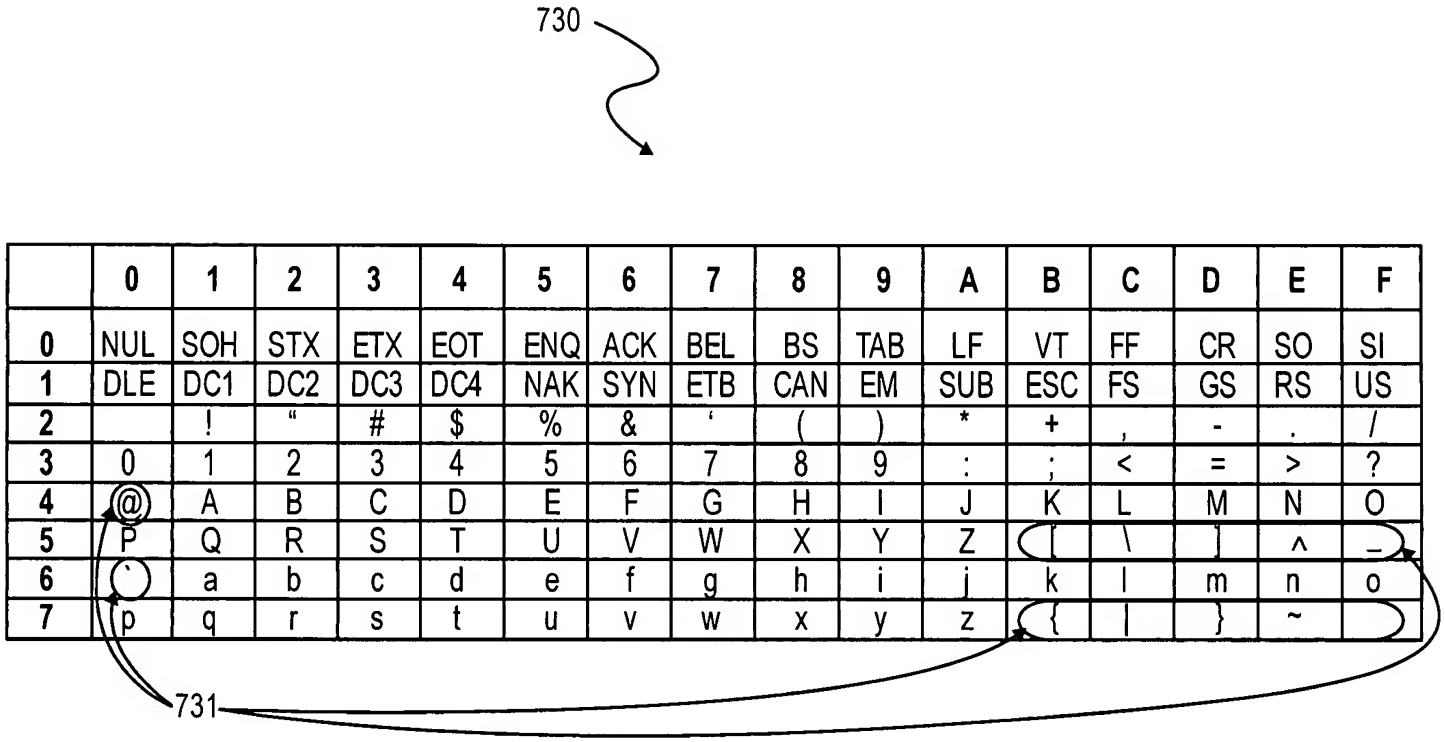

DETERMINE THE ENCODING RELATIONSHIP BETWEEN AN UPPERCASE AND A LOWERCASE CHARACTER
710
PERFORM AT COMPARISON INDEPENDENT OF THE CASE ENCODING RELATIONSHIP
720

FIG. 7



	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	SOH	STX	ETX	EOT	ENQ	ACK	BEL	BS	TAB	LF	VT	FF	CR	SO	SI
1	DLE	DC1	DC2	DC3	DC4	NAK	SYN	ETB	CAN	EM	SUB	ESC	FS	GS	RS	US
2		!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	

FIG. 7A

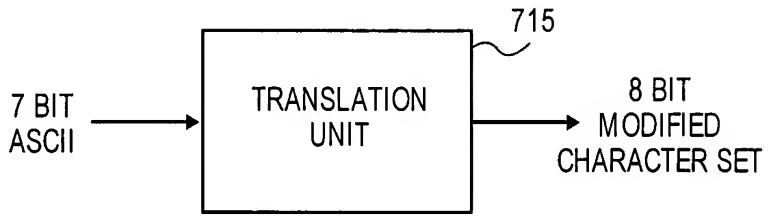


FIG. 7B

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	SOH	STX	ETX	EOT	ENQ	ACK	BEL	BS	TAB	LF	VT	FF	CR	SO	SI
1	DLE	DC1	DC2	DC3	DC4	NAK	SYN	ETB	CAN	EM	SUB	ESC	FS	GS	RS	US
2		!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
3	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5	P	Q	R	S	T	U	V	W	X	Y	Z					
6		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7	p	q	r	s	t	u	v	w	x	y	z					
8																
9																
A																
B																
C																
D	@											[	\	]	^	_
E																
F												{	|	}	~	

FIG. 7C

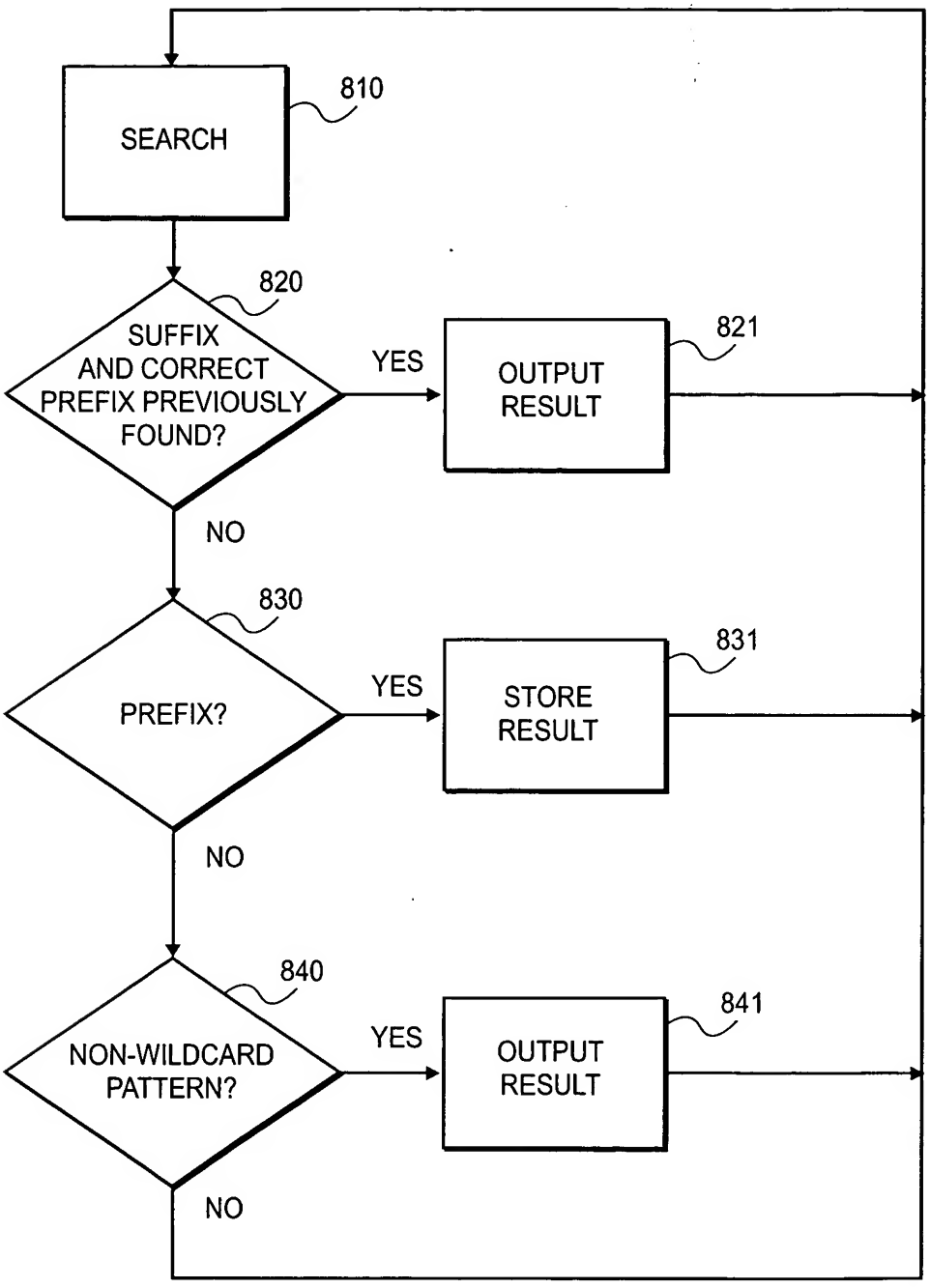
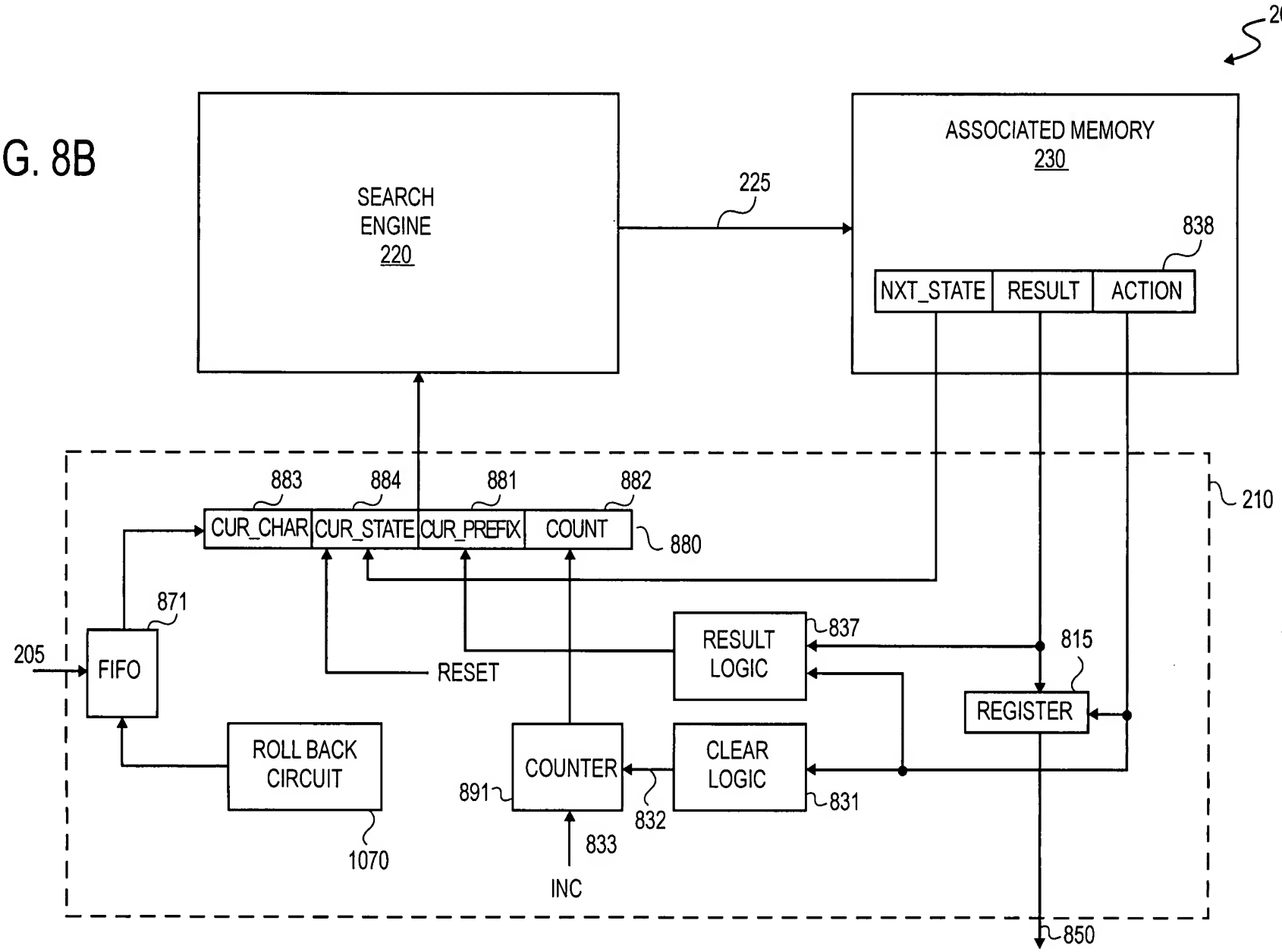

SEARCH
810
820
SUFFIX AND CORRECT PREFIX PREVIOUSLY FOUND?
YES
OUTPUT RESULT
821
NO
830
PREFIX?
YES
STORE RESULT
831
NO
840
NON-WILDCARD PATTERN?
YES
OUTPUT RESULT
841
NO

FIG. 8A

FIG. 8B


200
SEARCH ENGINE 220
225
ASSOCIATED MEMORY 230
838
NXT_STATE
RESULT
ACTION
210
883
884
881
882
CUR_CHAR
CUR_STATE
CUR_PREFIX
COUNT
880
871
205
FIFO
RESET
RESULT LOGIC
837
815
REGISTER
ROLL BACK CIRCUIT
1070
COUNTER
891
832
CLEAR LOGIC
831
833
INC
850

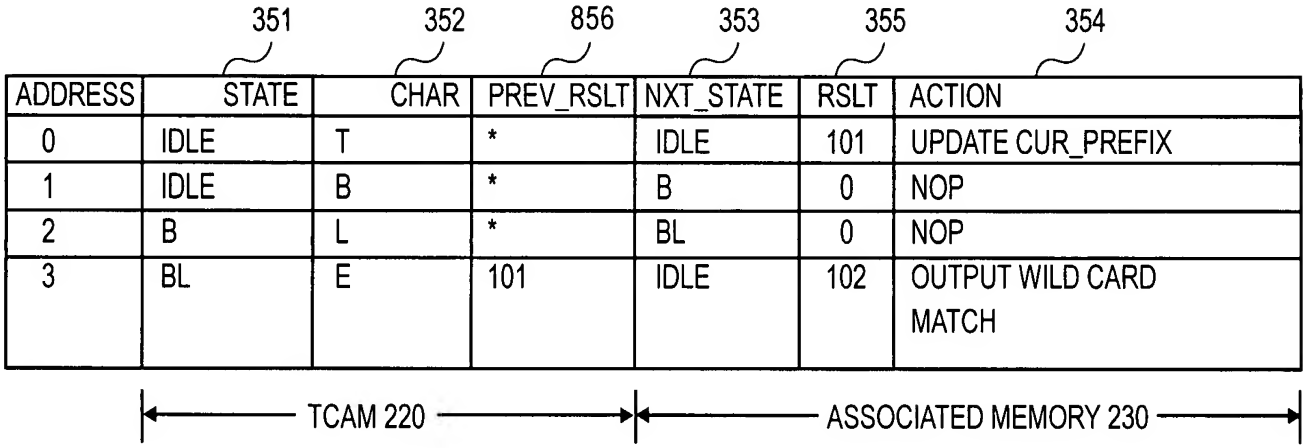

351
352
856
353
355
354
ADDRESS
STATE
CHAR
PREV_RSLT
NXT_STATE
RSLT
ACTION
0
IDLE
T
*
IDLE
101
UPDATE CUR_PREFIX
1
IDLE
B
*
B
0
NOP
2
B
L
*
BL
0
NOP
3
BL
E
101
IDLE
102
OUTPUT WILD CARD MATCH
TCAM 220
ASSOCIATED MEMORY 230

FIG. 8C

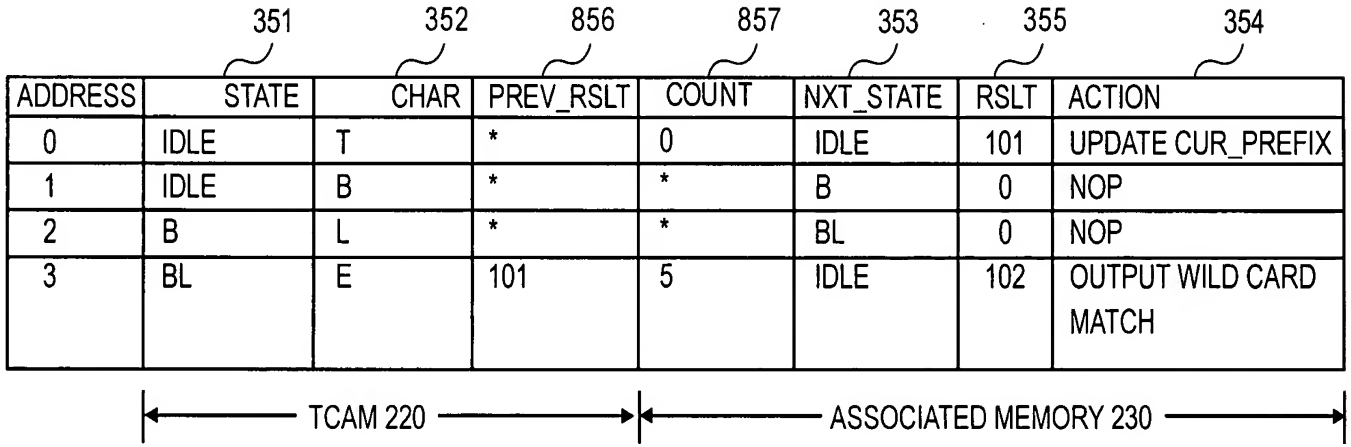

351
352
856
857
353
355
354
ADDRESS
STATE
CHAR
PREV_RSLT
COUNT
NXT_STATE
RSLT
ACTION
0
IDLE
T
*
0
IDLE
101
UPDATE CUR_PREFIX
1
IDLE
B
*
*
B
0
NOP
2
B
L
*
*
BL
0
NOP
3
BL
E
101
5
IDLE
102
OUTPUT WILD CARD MATCH
TCAM 220
ASSOCIATED MEMORY 230

FIG. 8D

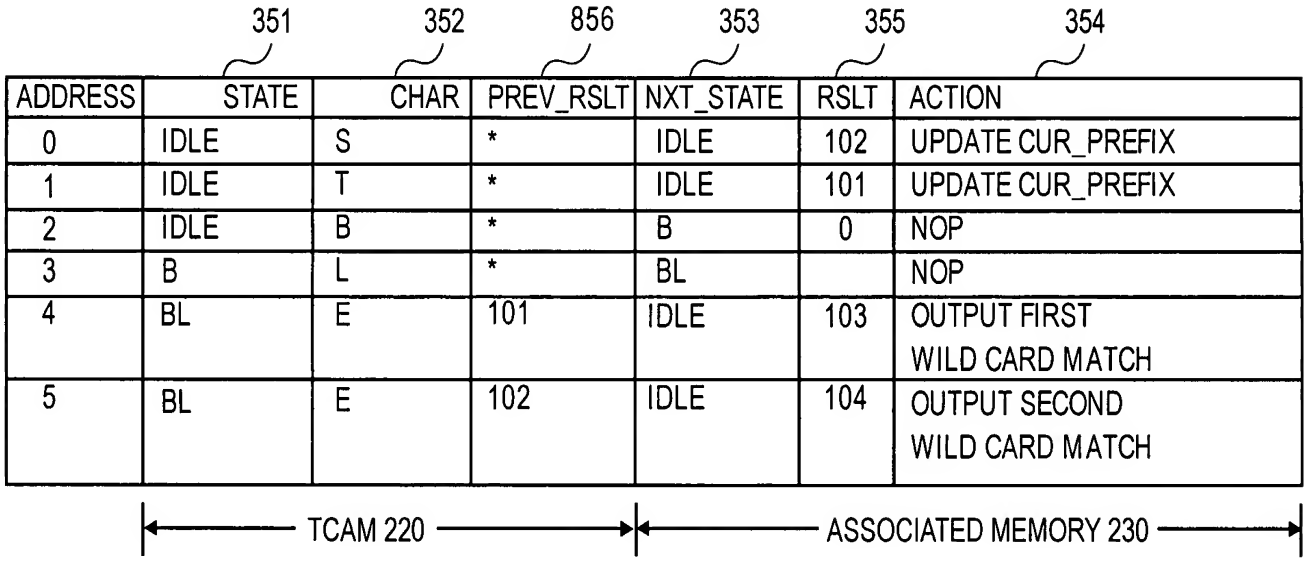

351
352
856
353
355
354
ADDRESS
STATE
CHAR
PREV_RSLT
NXT_STATE
RSLT
ACTION
0
IDLE
S
*
IDLE
102
UPDATE CUR_PREFIX
1
IDLE
T
*
IDLE
101
UPDATE CUR_PREFIX
2
IDLE
B
*
B
0
NOP
3
B
L
*
BL
NOP
4
BL
E
101
IDLE
103
OUTPUT FIRST WILD CARD MATCH
5
BL
E
102
IDLE
104
OUTPUT SECOND WILD CARD MATCH
TCAM 220
ASSOCIATED MEMORY 230

FIG. 8E

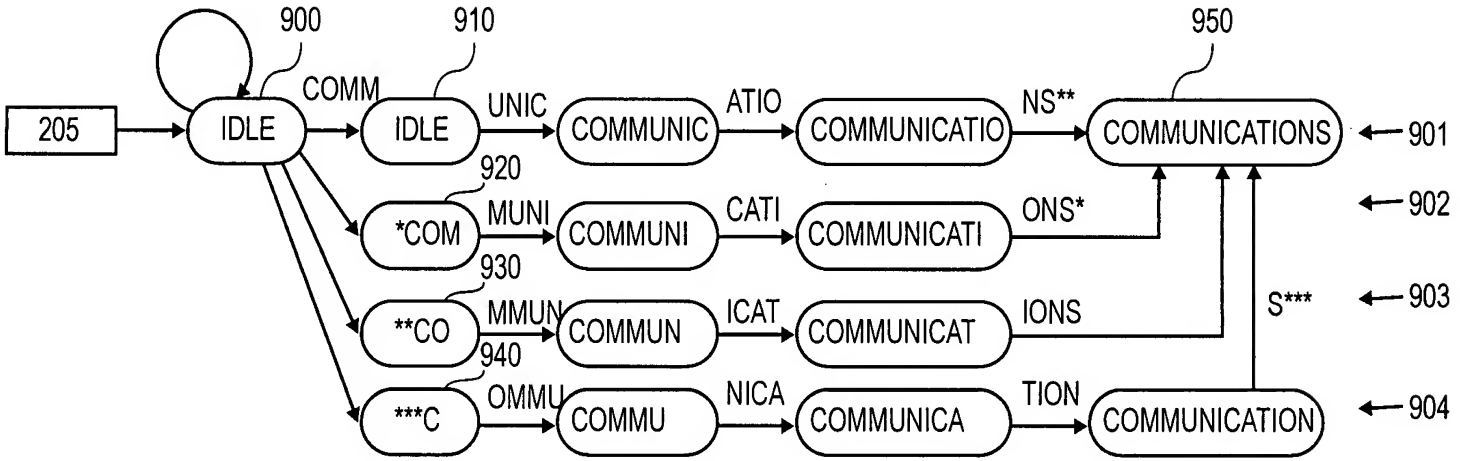

205
IDLE
900
COMM
IDLE
910
UNIC
COMMUNIC
ATIO
COMMUNICATIO
NS**
950
COMMUNICATIONS
901
*COM
920
MUNI
COMMUNI
CATI
COMMUNICATI
ONS*
902
**CO
930
MMUN
COMMUN
ICAT
COMMUNICAT
IONS
S***
903
***C
940
OMMU
COMMU
NICA
COMMUNICA
TION
COMMUNICATION
904

FIG. 9A

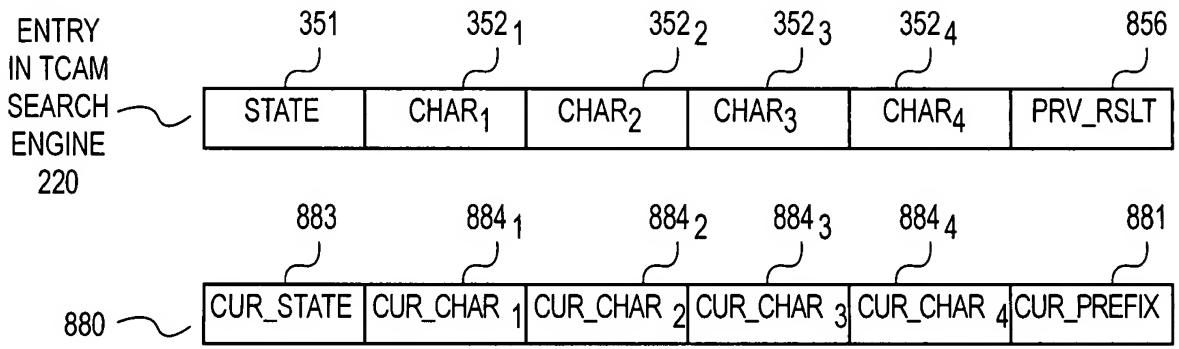

ENTRY
IN TCAM
SEARCH
ENGINE
220
351
352 1
352 2
352 3
352 4
856
STATE
CHAR1
CHAR2
CHAR3
CHAR4
PRV_RSLT
883
884 1
884 2
884 3
884 4
881
880
CUR_STATE
CUR_CHAR 1
CUR_CHAR 2
CUR_CHAR 3
CUR_CHAR 4
CUR_PREFIX

FIG. 9B

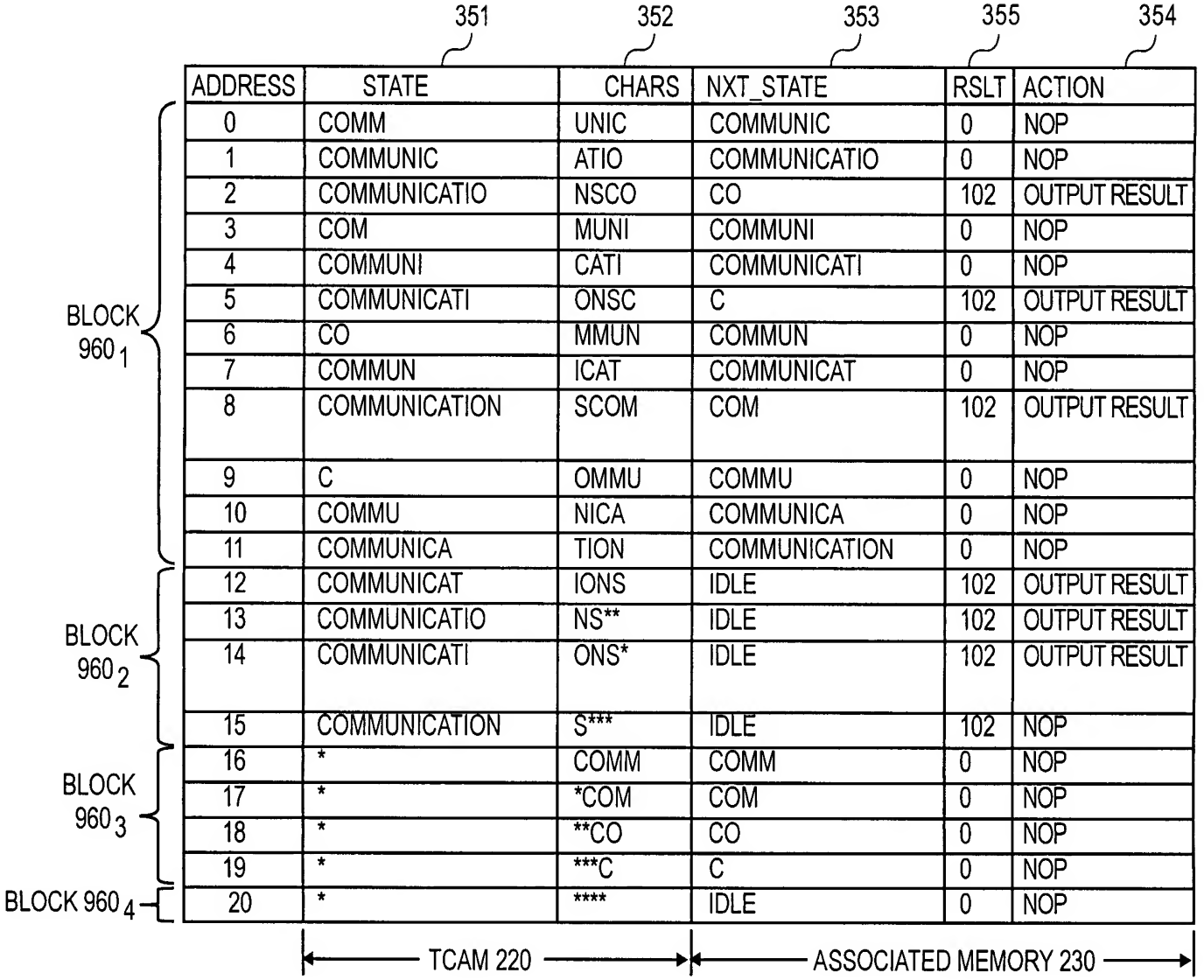

351
352
353
355
354
ADDRESS
STATE
CHARS
NXT_STATE
RSLT
ACTION
0 COMM UNIC COMMUNIC 0 NOP
1 COMMUNIC ATIO COMMUNICATIO 0 NOP
2 COMMUNICATIO NSCO CO 102 OUTPUT RESULT
3 COM MUNI COMMUNI 0 NOP
4 COMMUNI CATI COMMUNICATI 0 NOP
5 COMMUNICATI ONSC C 102 OUTPUT RESULT
6 CO MMUN COMMUN 0 NOP
7 COMMUN ICAT COMMUNICAT 0 NOP
8 COMMUNICATION SCOM COM 102 OUTPUT RESULT
9 C OMMU COMMU 0 NOP
10 COMMU NICA COMMUNICA 0 NOP
11 COMMUNICA TION COMMUNICATION 0 NOP
12 COMMUNICAT IONS IDLE 102 OUTPUT RESULT
13 COMMUNICATIO NS** IDLE 102 OUTPUT RESULT
14 COMMUNICATI ONS* IDLE 102 OUTPUT RESULT
15 COMMUNICATION S*** IDLE 102 NOP
16 * COMM COMM 0 NOP
17 * *COM COM 0 NOP
18 * **CO CO 0 NOP
19 * ***C C 0 NOP
20 * **** IDLE 0 NOP
BLOCK 960 1
BLOCK 960 2
BLOCK 960 3
BLOCK 960 4
TCAM 220
ASSOCIATED MEMORY 230

FIG. 9C

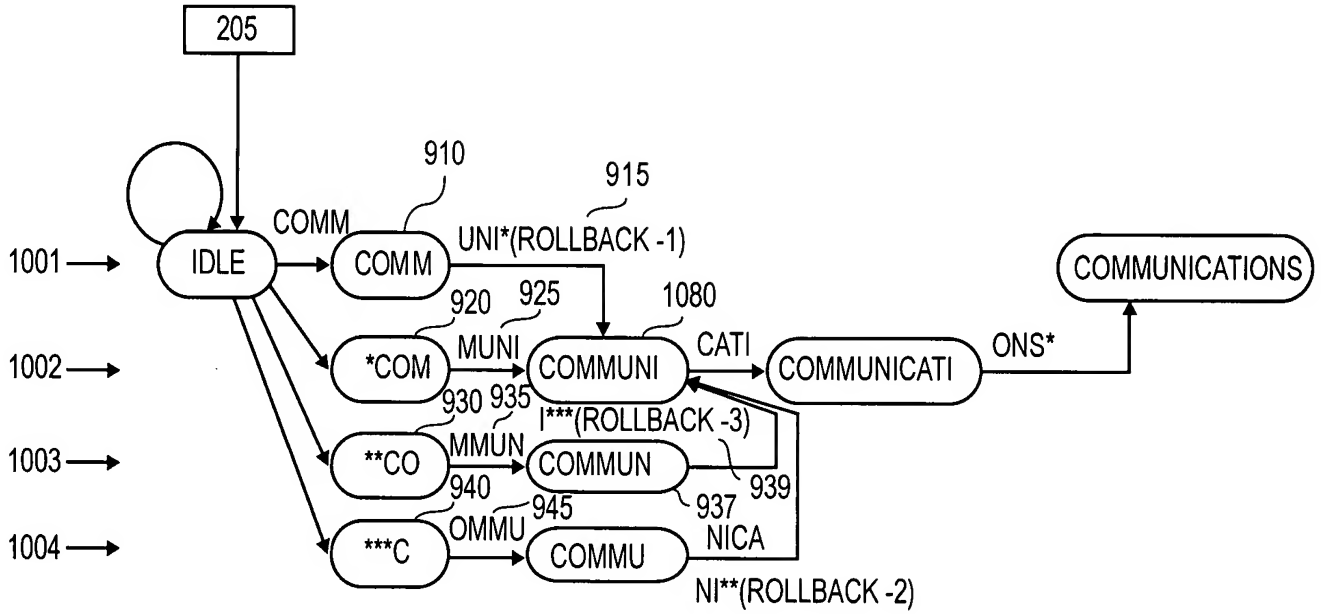

205
910
915
COMM
1001
IDLE
COMM
UNI*(ROLLBACK -1)
COMMUNICATIONS
920
925
1080
1002
*COM
MUNI
COMMUNI
CATI
COMMUNICATI
ONS*
930
935
I***(ROLLBACK -3)
1003
**CO
MMUN
COMMUN
939
937
940
945
1004
***C
OMMU
COMMU
NICA
NI**(ROLLBACK -2)

FIG. 10A

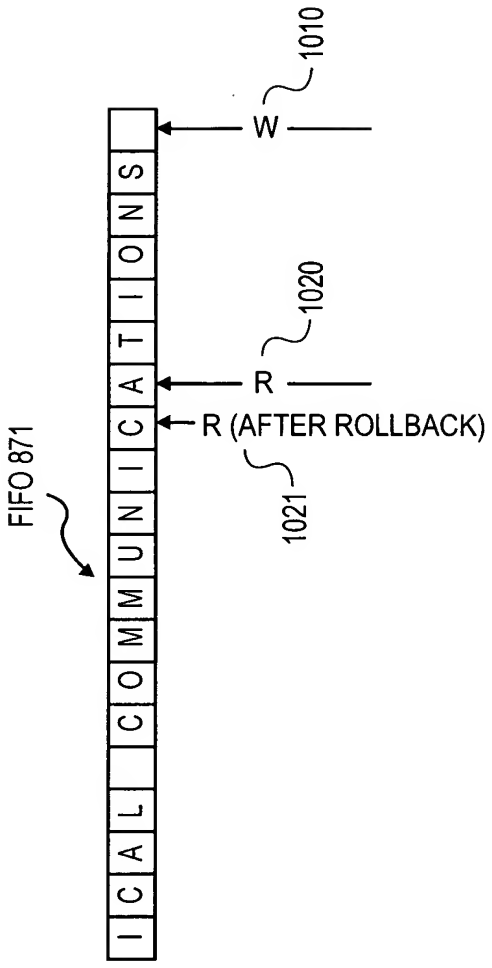

FIFO 871
I C A L C O M M U N I C A T I O N S
W
1010
R
1020
R (AFTER ROLLBACK)
1021

FIG. 10B

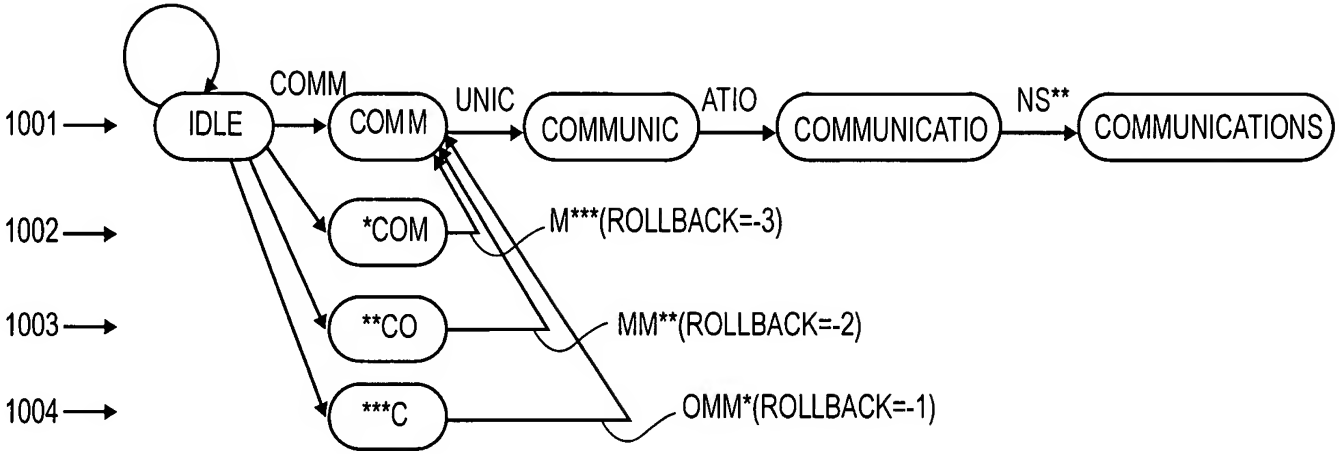

1001
1002
1003
1004
IDLE
COMM
COMM
UNIC
COMMUNIC
ATIO
COMMUNICATIO
NS**
COMMUNICATIONS
*COM
M***(ROLLBACK=-3)
**CO
MM**(ROLLBACK=-2)
***C
OMM*(ROLLBACK=-1)

FIG. 10C

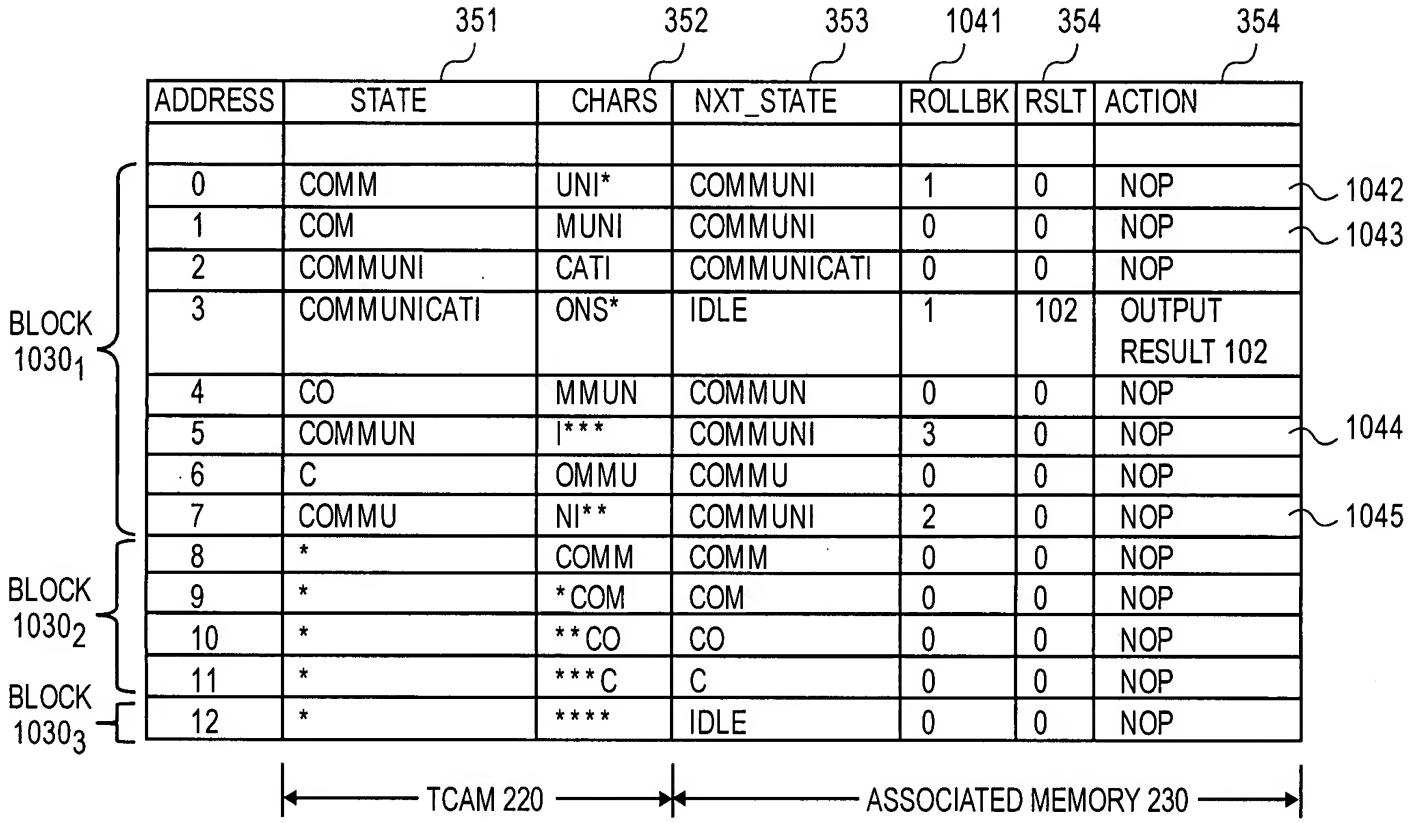

351
352
353
1041
354
354
ADDRESS
STATE
CHARS
NXT_STATE
ROLLBK
RSLT
ACTION
0 COMM UNI* COMMUNI 1 0 NOP
1 COM MUNI COMMUNI 0 0 NOP
2 COMMUNI CATI COMMUNICATI 0 0 NOP
3 COMMUNICATI ONS* IDLE 1 102 OUTPUT RESULT 102
4 CO MMUN COMMUN 0 0 NOP
5 COMMUN I*** COMMUNI 3 0 NOP
6 C OMMU COMMU 0 0 NOP
7 COMMU NI** COMMUNI 2 0 NOP
8 * COMM COMM 0 0 NOP
9 * *COM COM 0 0 NOP
10 * **CO CO 0 0 NOP
11 * ***C C 0 0 NOP
12 * **** IDLE 0 0 NOP
1042
1043
1044
1045
BLOCK 1030₁
BLOCK 1030₂
BLOCK 1030₃
TCAM 220
ASSOCIATED MEMORY 230

FIG. 10D

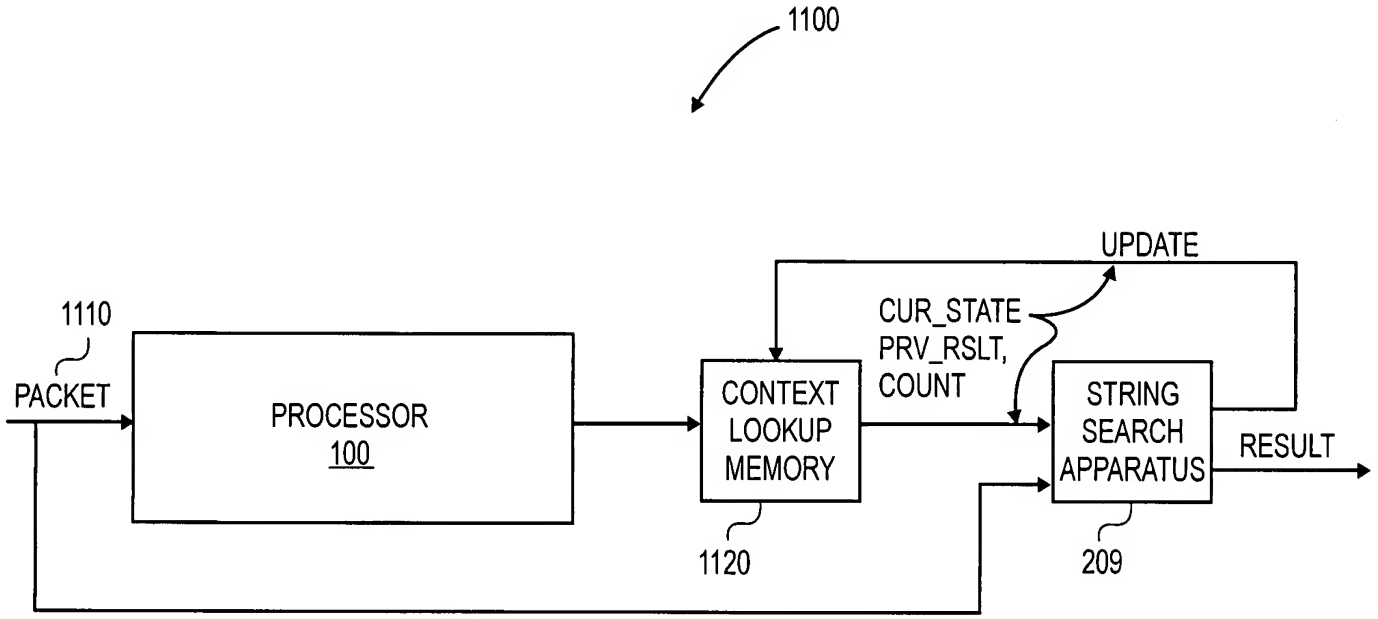

1100
UPDATE
1110
PACKET
PROCESSOR
100
CONTEXT
LOOKUP
MEMORY
CUR_STATE
PRV_RSLT,
COUNT
STRING
SEARCH
APPARATUS
RESULT
1120
209

FIG. 11